SEQUENCE LISTING

<110> PTC Therapeutics, Inc.

<120> METHODS FOR IDENTIFYING COMPOUNDS THAT MODULATE UNTRANSLATED
REGION-DEPENDENT GENE EXPRESSION AND METHODS OF USING SAME

<130> 10589-012-228

<140>
<141>

<150> 60/441,637
<151> 2003-01-21

<160> 94

<170> PatentIn version 3.2

<210> 1
<211> 14
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Motif

<220>
<221> misc_feature
<222> 3, 7, 8, 11
<223> n = a, t, c, or g

<220>
<221> misc_feature
<222> (7)..(8)
<223> This represents one form of the sequence as described, other forms
described may have up to five nucleotides in this variable region

<400> 1
ggntggnngg ntgg   14

<210> 2
<211> 14
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Motif

<220>
<221> misc_feature
<222> 3, 4, 7, 8, 11, 12
<223> n = a, t, g or c

<220>

<221> misc_feature
<222> (2)..(12)

<223> This represents one form of the sequence as described, other forms
      described have longer variable regions, typical is 2 - 10
      nucleotides

<400> 2
ggnnggnngg nngg   14

<210> 3
<211> 14
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Motif

<220>
<221> misc_feature
<222> 3, 4, 7, 8, 11, 12
<223> n = a, t, g, or c

<220>
<221> misc_feature
<222> (2)..(12)
<223> This represents one form of the sequence as described, other forms
      described have longer variable regions, typical is 2 - 10
      nucleotides

<400> 3
ggnnggnngg nngg   14

<210> 4
<211> 19
<212> RNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Motif

<400> 4
ccccrcccuc uuccccaag   19

<210> 5
<211> 152
<212> DNA
<213> Homo sapiens

<400> 5
gcagaggacc agctaagagg gagagaagca actacagacc ccccctgaaa acaaccctca   60

gacgccacat cccctgacaa gctgccaggc aggttctctt cctctcacat actgacccac   120

ggctccaccc tctctcccct ggaaaggaca cc   152

<210> 6
<211> 792
<212> DNA

2

<213> Homo sapiens

<400> 6

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tgaggaggac gaacatccaa ccttcccaaa cgcctcccct gccccaatcc ctttattacc       60

ccctccttca gacaccctca acctcttctg gctcaaaaag agaattgggg gcttagggtc      120

ggaacccaag cttagaactt taagcaacaa gaccaccact tcgaaacctg ggattcagga      180

atgtgtggcc tgcacagtga attgctggca accactaaga attcaaactg gggcctccag      240

aactcactgg ggcctacagc tttgatccct gacatctgga atctggagac cagggagcct      300

ttggttctgg ccagaatgct gcaggacttg agaagacctc acctagaaat tgacacaagt      360

ggaccttagg ccttcctctc tccagatgtt tccagacttc cttgagacac ggagcccagc      420

cctccccatg gagccagctc cctctattta tgtttgcact tgtgattatt tattatttat      480

ttattattta tttatttaca gatgaatgta tttatttggg agaccggggt atcctggggg      540

acccaatgta ggagctgcct tggctcagac atgttttccg tgaaaacgga gctgaacaat      600

aggctgttcc catgtagccc cctggcctct gtgccttctt ttgattatgt tttttaaaat      660

atttatctga ttaagttgtc taaacaatgc tgatttggtg accaactgtc actcattgct      720

gagcctctgc tccccagggg agttgtgtct gtaatcgccc tactattcag tggcgagaaa      780

taaagtttgc tt                                                          792
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<210> 7
<211> 21
<212> RNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Motif

<400> 7

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auuuauuuau uuauuuauuu a                                                 21
```

<210> 8
<211> 40
<212> DNA
<213> Homo sapiens

<400> 8

```
kctggaggat gtggctgcag agcctgctgc tcttgggcac                             40
```

<210> 9
<211> 289
<212> DNA
<213> Homo sapiens

<400> 9

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gccggggagc tgctctctca tgaaacaaga gctagaaact caggatggtc atcttggagg       60
```

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gaccaagggg tgggccacag ccatggtggg agtggcctgg acctgccctg ggccacactg      120

accctgatac aggcatggca gaagaatggg aatattttat actgacagaa atcagtaata      180

tttatatatt tatatttta aaatatttat ttatttattt atttaagttc atattccata       240

tttattcaag atgttttacc gtaataatta ttattaaaaa tatgcttct                  289


<210>  10
<211>  21
<212>  RNA
<213>  Artificial

<220>
<223>  Description of Artificial Sequence: Motif

<400>  10
auuuauuuau uuauuuauuu a                                                  21


<210>  11
<211>  47
<212>  DNA
<213>  Homo sapiens

<400>  11
atcactctct ttaatcacta ctcacattaa cctcaactcc tgccaca                     47


<210>  12
<211>  307
<212>  DNA
<213>  Homo sapiens

<400>  12
taattaagtg cttcccactt aaaacatatc aggccttcta tttatttatt taaatattta      60

aattttatat ttattgttga atgtatggtt gctacctatt gtaactatta ttcttaatct      120

taaaactata aatatggatc ttttatgatt cttttttgtaa gccctagggg ctctaaaatg     180

gtttacctta tttatcccaa aaatatttat tattatgttg aatgttaaat atagtatcta      240

tgtagattgg ttagtaaaac tatttaataa atttgataaa tataaaaaaa aaaaacaaaa      300

aaaaaaa                                                                 307


<210>  13
<211>  15
<212>  RNA
<213>  Artificial

<220>
<223>  Description of Artificial Sequence: Motif


<220>
<221>  misc_feature
<222>  (1)..(15)


                                       4
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<223>   n = a, t, g or c

<400>   13
nauuuauuua uuuan                                                    15


<210>   14
<211>   62
<212>   DNA
<213>   Homo sapiens

<400>   14
ttctgccctc gagcccaccg ggaacgaaag agaagctcta tctcgcctcc aggagcccag    60

ct                                                                  62


<210>   15
<211>   427
<212>   DNA
<213>   Homo sapiens

<400>   15
tagcatgggc acctcagatt gttgttgtta atgggcattc cttcttctgg tcagaaacct    60

gtccactggg cacagaactt atgttgttct ctatggagaa ctaaaagtat gagcgttagg   120

acactatttt aattattttt aatttattaa tatttaaata tgtgaagctg agttaattta   180

tgtaagtcat atttatattt ttaagaagta ccacttgaaa cattttatgt attagttttg   240

aaataataat ggaaagtggc tatgcagttt gaatatcctt tgtttcagag ccagatcatt   300

tcttggaaag tgtaggctta cctcaaataa atggctaact tatacatatt tttaaagaaa   360

tatttatatt gtatttatat aatgtataaa tggtttttat accaataaat ggcattttaa   420

aaaattc                                                            427


<210>   16
<211>   15
<212>   RNA
<213>   Artificial

<220>
<223>   Description of Artificial Sequence: Motif


<220>
<221>   misc_feature
<222>   (1)..(15)
<223>   n = a, t, g or c

<400>   16
nauuuauuua uuuan                                                    15


<210>   17
<211>   701
<212>   DNA
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5

<400> 17
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aagagctcca gagagaagtc gaggaagaga gagacggggt cagagagagc gcgcgggcgt      60

gcgagcagcg aaagcgacag gggcaaagtg agtgacctgc ttttgggggt gaccgccgga     120

gcgcggcgtg agccctcccc cttgggatcc cgcagctgac cagtcgcgct gacggacaga     180

cagacagaca ccgcccccag ccccagttac cacctcctcc ccggccggcg gcggacagtg     240

gacgcggcgg cgagccgcgg gcaggggccg gagcccgccc ccggaggcgg ggtggagggg     300

gtcggagctc gcggcgtcgc actgaaactt ttcgtccaac ttctgggctg ttctcgcttc     360

ggaggagccg tggtccgcgc gggggaagcc gagccgagcg gagccgcgag aagtgctagc     420

tcgggccggg aggagccgca gccggaggag ggggaggagg aagaagagaa ggaagaggag     480

aggggccgc agtggcgact cggcgctcgg aagccgggct catggacggg tgaggcggcg       540

gtgtgcgcag acagtgctcc agcgcgcgcg ctccccagcc ctggcccggc ctcgggccgg     600

gaggaagagt agctcgccga ggcgccgagg agagcgggcc gccccacagc ccgagccgga     660

gagggacgcg agccgcgcgc cccggtcggg cctccgaaac c                        701
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<210> 18
<211> 1892
<212> DNA
<213> Homo sapiens

<400> 18
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tgagccgggc aggaggaagg agcctccctc agggtttcgg gaaccagatc tctctccagg      60

aaagactgat acagaacgat cgatacagaa accacgctgc cgccaccaca ccatcaccat     120

cgacagaaca gtccttaatc cagaaacctg aaatgaagga agaggagact ctgcgcagag     180

cactttgggt ccggagggcg agactccggc ggaagcattc ccgggcgggt gacccagcac     240

ggtccctctt ggaattggat tcgccatttt attttttcttg ctgctaaatc accgagcccg    300

gaagattaga gagtttttatt tctgggattc ctgtagacac acccacccac atacatacat    360

ttatatatat atatattata tatatataaa aataaatatc tctattttat atatataaaa     420

tatatatatt ctttttttaa attaacagtg ctaatgttat tggtgtcttc actggatgta     480

tttgactgct gtggacttga gttgggaggg gaatgttccc actcagatcc tgacagggaa     540

gaggaggaga tgagagactc tggcatgatc ttttttttgt cccacttggt ggggccaggg     600

tcctctcccc tgcccaagaa tgtgcaaggc caggcatgg gggcaaatat gacccagttt      660

tgggaacacc gacaaaccca gccctggcgc tgagcctctc taccccaggt cagacggaca     720

gaaagacaaa tcacaggttc cgggatgagg acaccggctc tgaccaggag tttggggagc     780

ttcaggacat tgctgtgctt tggggattcc ctccacatgc tgcacgcgca tctcgccccc     840
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6

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aggggcactg cctggaagat tcaggagcct gggcggcctt cgcttactct cacctgcttc      900

tgagttgccc aggaggccac tggcagatgt cccggcgaag agaagagaca cattgttgga      960

agaagcagcc catgacagcg ccccttcctg ggactcgccc tcatcctctt cctgctcccc     1020

ttcctggggt gcagcctaaa aggacctatg tcctcacacc attgaaacca ctagttctgt     1080

cccccaggaa acctggttg tgtgtgtgtg agtggttgac cttcctccat cccctggtcc      1140

ttcccttccc ttcccgaggc acagagagac agggcaggat ccacgtgccc attgtggagg     1200

cagagaaaag agaaagtgtt ttatatacgg tacttattta atatcccttt ttaattagaa     1260

attagaacag ttaatttaat taaagagtag ggtttttttt cagtattctt ggttaatatt     1320

taatttcaac tatttatgag atgtatcttt tgctctctct tgctctctta tttgtaccgg     1380

tttttgtata taaaattcat gtttccaatc tctctctccc tgatcggtga cagtcactag     1440

cttatcttga acagatattt aattttgcta acactcagct ctgccctccc cgatcccctg     1500

gctccccagc acacattcct ttgaaagagg gtttcaatat acatctacat actatatata     1560

tattgggcaa cttgtatttg tgtgtatata tatatatata tgtttatgta tatatgtgat     1620

cctgaaaaaa taaacatcgc tattctgttt tttatatgtt caaaccaaac aagaaaaaat     1680

agagaattct acatactaaa tctctctcct tttttaattt taatatttgt tatcatttat     1740

ttattggtgc tactgtttat ccgtaataat tgtgggaaa agatattaac atcacgtctt      1800

tgtctctagt gcagtttttc gagatattcc gtagtacata tttattttta aacaacgaca     1860

aagaaataca gatatatctt aaaaaaaaaa aa                                   1892


<210>  19
<211>  249
<212>  RNA
<213>  Homo sapiens

<400>  19
ccgggcucau ggacggguga ggcggcggug ugcgcagaca gugcuccagc gcgcgcgcuc       60

cccagcccug gcccggccuc gggccgggag gaagaguagc ucgccgaggc gccgaggaga      120

gcgggccgcc ccacagcccg agccggagag ggacgcgagc cgcgcgcccc ggucgggccu      180

ccgaaaccau gaacuuucug cugucuuggg ugcauggag ccuugccuug cugcucuacc       240

uccaccaug                                                             249


<210>  20
<211>  15
<212>  RNA
<213>  Artificial

<220>
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7

<223> Description of Artificial Sequence: Motif

<220>
<221> misc_feature
<222> (1)..(15)
<223> n = a, t, g or c

<400> 20
nauuuauuua uuuan   15

<210> 21
<211> 49
<212> DNA
<213> Homo sapiens

<400> 21
ccgccagatt tgaatcgcgg gacccgttgg cagaggtggc ggcggcggc   49

<210> 22
<211> 1141
<212> DNA
<213> Homo sapiens

<400> 22
ggcctctggc cggagctgcc tggtcccaga gtggctgcac cacttccagg gtttattccc   60

tggtgccacc agccttcctg tgggcccctt agcaatgtct taggaaagga gatcaacatt   120

ttcaaattag atgtttcaac tgtgctcctg ttttgtcttg aaagtggcac cagaggtgct   180

tctgcctgtg cagcgggtgc tgctggtaac agtggctgct tctctctctc tctctctttt   240

ttgggggctc atttttgctg ttttgattcc cgggcttacc aggtgagaag tgagggagga   300

agaaggcagt gtcccttttg ctagagctga cagctttgtt cgcgtgggca gagccttcca   360

cagtgaatgt gtctggacct catgttgttg aggctgtcac agtcctgagt gtggacttgg   420

caggtgcctg ttgaatctga gctgcaggtt ccttatctgt cacacctgtg cctcctcaga   480

ggacagtttt tttgttgttg tgtttttttg ttttttttttt ttggtagatg catgacttgt   540

gtgtgatgag agaatggaga cagagtccct ggctcctcta ctgtttaaca acatggcttt   600

cttattttgt ttgaattgtt aattcacaga atagcacaaa ctacaattaa aactaagcac   660

aaagccattc taagtcattg gggaaacggg gtgaacttca ggtggatgag gagacagaat   720

agagtgatag gaagcgtctg gcagatactc cttttgccac tgctgtgtga ttagacaggc   780

ccagtgagcc gcggggcaca tgctggccgc tcctccctca gaaaaaggca gtggcctaaa   840

tccttttaa atgacttggc tcgatgctgt gggggactgg ctgggctgct gcaggccgtg   900

tgtctgtcag cccaaccttc acatctgtca cgttctccac acgggggaga gacgcagtcc   960

gcccaggtcc ccgctttctt tggaggcagc agctcccgca gggctgaagt ctggcgtaag   1020

8

atgatggatt tgattcgccc tcctccctgt catagagctg cagggtggat tgttacagct   1080

tcgctggaaa cctctggagg tcatctcggc tgttcctgag aaataaaaag cctgtcattt   1140

c   1141

<210> 23
<211> 247
<212> DNA
<213> Homo sapiens

<400> 23
ccccggcgca gcgcggccgc agcagcctcc gccccccgca cggtgtgagc gcccgacgcg   60

gccgaggcgg ccggagtccc gagctagccc cggcggccgc cgccgcccag accggacgac   120

aggccacctc gtcggcgtcc gcccgagtcc ccgcctcgcc gccaacgcca caaccaccgc   180

gcacggcccc ctgactccgt ccagtattga tcgggagagc cggagcgagc tcttcgggga   240

gcagcag   247

<210> 24
<211> 1716
<212> DNA
<213> Homo sapiens

<400> 24
tgaccacgga ggatagtatg agccctaaaa atccagactc tttcgatacc caggaccaag   60

ccacagcagg tcctccatcc caacagccat gcccgcatta gctcttagac ccacagactg   120

gttttgcaac gtttacaccg actagccagg aagtacttcc acctcgggca cattttggga   180

agttgcattc ctttgtcttc aaactgtgaa gcatttacag aaacgcatcc agcaagaata   240

ttgtcccttt gagcagaaat ttatctttca aagaggtata tttgaaaaaa aaaaaaaaag   300

tatatgtgag gatttttatt gattggggat cttggagttt ttcattgtcg ctattgattt   360

ttacttcaat gggctcttcc aacaaggaag aagcttgctg gtagcacttg ctaccctgag   420

ttcatccagg cccaactgtg agcaaggagc acaagccaca agtcttccag aggatgcttg   480

attccagtgg ttctgcttca aggcttccac tgcaaaacac taaagatcca agaaggcctt   540

catggcccca gcaggccgga tcggtactgt atcaagtcat ggcaggtaca gtaggataag   600

ccactctgtc ccttcctggg caaagaagaa acggagggga tgaattcttc cttagactta   660

cttttgtaaa aatgtcccca cggtacttac tccccactga tggaccagtg gtttccagtc   720

atgagcgtta gactgacttg tttgtcttcc attccattgt tttgaaactc agtatgccgc   780

ccctgtcttg ctgtcatgaa atcagcaaga gaggatgaca catcaaataa taactcggat   840

tccagcccac attggattca tcagcatttg gaccaatagc ccacagctga gaatgtggaa   900

tacctaagga taacaccgct tttgttctcg caaaaacgta tctcctaatt tgaggctcag   960

9

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atgaaatgca  tcaggtcctt  tggggcatag  atcagaagac  tacaaaaatg  aagctgctct      1020

gaaatctcct  ttagccatca  ccccaacccc  ccaaaattag  tttgtgttac  ttatggaaga      1080

tagttttctc  cttttacttc  acttcaaaag  cttttactc   aaagagtata  tgttccctcc      1140

aggtcagctg  cccccaaacc  ccctccttac  gctttgtcac  acaaaaagtg  tctctgcctt      1200

gagtcatcta  ttcaagcact  tacagctctg  gccacaacag  ggcattttac  aggtgcgaat      1260

gacagtagca  ttatgagtag  tgtgaattca  ggtagtaaat  atgaaactag  ggtttgaaat      1320

tgataatgct  ttcacaacat  ttgcagatgt  tttagaagga  aaaaagttcc  ttcctaaaat      1380

aatttctcta  caattggaag  attggaagat  tcagctagtt  aggagcccat  tttttcctaa      1440

tctgtgtgtg  ccctgtaacc  tgactggtta  acagcagtcc  tttgtaaaca  gtgttttaaa      1500

ctctcctagt  caatatccac  cccatccaat  ttatcaagga  agaaatggtt  cagaaaatat      1560

tttcagccta  cagttatgtt  cagtcacaca  cacatacaaa  atgttccttt  tgcttttaaa      1620

gtaatttttg  actcccagat  cagtcagagc  ccctacagca  ttgttaagaa  agtatttgat      1680

ttttgtctca  atgaaaataa  aactatattc  atttcc                                  1716


<210>  25
<211>  160
<212>  DNA
<213>  Homo sapiens

<400>  25
tataaaagct  gggccggcgc  gggccgggcc  attcgcgacc  cggaggtgcg  cgggcgcggg        60

cgagcagggt  ctccgggtgg  gcggcgcgac  gccccgcgca  ggctggaggc  cgccgaggct       120

cgccatgccg  ggagaactct  aactcccccca  tggagtcggc                             160


<210>  26
<211>  1306
<212>  DNA
<213>  Homo sapiens

<400>  26
tgaggcgcgc  ggctgtggga  ccgccctggg  ccagcctccg  gcggggaccc  agggagtggt        60

ttggggtcgc  cggatctcga  ggcttgccca  gaccgtgcga  gccaggacta  ggagattccg       120

gtgcctcctg  aaagcctggc  ctgctccgcg  tgtcccctcc  cttcctctgc  gccggacttg       180

gtgcgtctaa  gatgagggg   ccaggcggtg  gcttctccct  gcgaggaggg  gagaattctt       240

ggggctgagc  tgggagcccg  gcaactctag  tatttaggat  aacttgtgcc  ttggaaatgc       300

aaactcaccg  ctccaatgcc  tactgagtag  ggggagcaaa  tcgtgccttg  tcattttatt       360

tggaggtttc  ctgcctcctt  cccgaggcta  cagcagaccc  ccatgagaga  aggaggggag       420
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10

caggcccgtg gaggaggggg gctcagggag ctgagatccc gacaagcccg ccagccccag   480

ccgctcctcc acgcctgtcc ttagaaaggg gtggaaacat agggacttgg ggcttggaac   540

ctaaggttgt tccctagttc tacatgaagg tggaggtctc tagttccacg cctctcccac   600

ctccctccgc acacacccca cccagcctgc tataggctgg ctttcccttg gggctggaac   660

tcactgcgat ggggtcacca ggtgaccagt ggagccccca ccccgagtca gaccagaaag   720

ctaggtcgtg ggtcagctct gaggatgtat acccctggtg ggagagggag acctagagat   780

ctggctgtgg ggcgggcatg gggggtgaag ggccactggg accctcagcc ttgtttgtac   840

tgtatgcctt cagcattgcc taggaacacg aagcacgatc agtccatcca gagggaccgg   900

agttatgaca agcttcccaa atattttgct ttatcagccg atatcaacac ttgtatctgg   960

cctctgtgcc cagcagtgcc ttgtgcaatg tgaatgtacc gtctctgcta aaccaccatt   1020

ttatttggtt ttgtttttgtt tggtttctc ggatacttgc caaaatgaga ctctccgtcg   1080

gcagctgggg gaagggtctg agactctctt tccttttggt tttgggatta cttttgatcc   1140

tgggggacca atgaggtgag gggggttctc ctttgccctc agctttccca gccctccggc   1200

ctgggctgcc cacaaggctt ctcccccaga ggccctggct cctggtcggg aagggaggtg   1260

cctcccgcca acgcatcact ggggctggga gcagggaagg gaattc   1306

<210>   27
<211>   216
<212>   DNA
<213>   Homo sapiens

<400>   27
agcgagagcg cccccgagca gcgcccgcgc cctccgcgcc ttctccgccg ggacctcgag   60

cgaaagacgc ccgcccgccg cccagccctc gcctccctgc ccaccgggca caccgcgccg   120

ccacccccgac cccgctgcgc acggcctgtc cgctgcacac cagcttgttg gcgtcttcgt   180

cgccgcgctc gccccgggct actcctgcgc gccaca   216

<210>   28
<211>   687
<212>   DNA
<213>   Homo sapiens

<400>   28
taaatgctac ctgggtttcc agggcacacc tagacaaaca rgggagaaga gtgtcagaat   60

cagaatcatg gagaaaatgg gcggggggtgg tgtgggtgat gggactcatt gtagaaagga   120

agccttgctc attcttgagg agcattaagg tatttcgaaa ctgccaaggg tgctggtgcg   180

gatggacact aatgcagcca cgattggaga atactttgct tcatagtatt ggagcacatg   240

ttactgcttc attttggagc ttgtggagtt gatgactttc tgttttctgt ttgtaaatta   300

11

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tttgctaagc atattttctc taggcttttt tccttttggg gttctacagt cgtaaaagag        360

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agggcattcc atcccttcct gaaggggggac actccatgag tgtctgtgag aggcagctat       480

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12

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18

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acatcgcctt ttcctccccg cacctccgt  gcacttgtgt ccgaggagcg aggagcccct    180

cgggccctgg gtggcctctg ggccctttct cctgtctccg ccactccctc tggcggcgct    240

ggccgtggct ctgtctctct gaggtgggtc gggcgccctc tgcccgcccc ctcccacacc    300

agccaggctg gtctcctcta gcctgtttgt tgtggggtgg gggtatattt tgtaaccact    360

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ttagaccccg gggcagtcag gtgctccgga cacccgaagg caataaaaca ggagccgtga    480

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa    540

aaa                                                                 543


<210>  37
<211>  511
<212>  DNA
<213>  Homo sapiens

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tttctgcctg aatcacagcc ctcagttttt ctgtcctcat gcatttgtct ttgtggctct    180

ttccgtcttt ctgcccttga caccatcccc tctcccagtg cttcccctct gcttccagat    240

cgcttcatga cttaggcagg gaaacagagg tcagggcctc cttccaggct tccctctgca    300

tcttactgag tatgcaggtc ggaagagcct cgggtcctgc ctccgcgggt ggcctagagc    360

caaaggaagg cggagcccgt cggggcggga ttggccctta gggccacctc ataaagcctg    420

gggcgagggg cacaacggcc ttgggaagga gccctgctgg ggccgtccag tcccccagac    480

ctcacaggct cagtcgcgga tctgcagtgt c                                   511


<210>  38
<211>  458
<212>  DNA
<213>  Homo sapiens
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20

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caagtggaca gtctggccac tgtcaaggca gggaaggggc catgactttt ctgccctgcc      180

ctcagcctgt tgccctgcct cccaaacccc attagtctag ccttgtagct gttactgcaa      240

gtgtttcttc tggcttagtc tgttttctaa agccaggact attcccttc ctccccagga       300

atatgtgttt tcctttgtct taatcgatct ggtaggggag aaatggcgaa tgtcatacac      360

atgagatggt atatccttgc gatgtacaga atcagaaggt ggtttgacag catcataaac      420

aggctgactg gcaggaatga aaaaaaaaa aaaaaaaa                               458


<210>   39
<211>   270
<212>   DNA
<213>   Homo sapiens

<400>   39
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gcggccgagc gggcaggtga ggagggtgag ccgcgcggag gggcccgcct cggccccggc      180

tcagcccccg cccgcgcccc cagcccgccg ccgcgagcag cgcccggacc ccccagcggc      240

ggccccgccc gcccagcccc ccggcccgcc                                      270


<210>   40
<211>   751
<212>   DNA
<213>   Homo sapiens


<220>
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<222>   (535)..(739)
<223>   n = a, t, g or c

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ggtccagctc tgacatccct tcctggaaac agcatgaata aacactcat cccatgggtc       120

caaattaata tgattctgct ccccccttct ccttttagac atggttgtgg gtctggaggg      180

agacgtgggt ccaaggtcct catcccatcc tccctctgcc aggcactatg tgtctggggc      240

ttcgatcctt gggtgcaggc agggctggga cacgcggctt ccctcccagt ccctgccttg      300

gcaccgtcac agatgccaag caggcagcac ttagggatct cccagctggg ttagggcagg      360

gcctggaaat gtgcattttg cagaaacttt tgagggtcgt tgcaagactg tgtagcaggc      420
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21

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ctaccaggtc cctttcatct tgagagggac atggcccctt gttttctgca gcttccacgc      480

ctctgcactc cctgcccctg gcaagtgctc ccatcgcccc cggtgcccac catgnagctc      540

cccgcacctg actcccccca catccaaggg cagccctgga accagtgggc tagttccttg      600

aaggaagccc cactcattcc tattaatccc tcagaattcc cggggggagc cttccctcct      660

gaaccttggt aaaaaatggg gaacgagaaa aaccccgct tggagctgtg cgtttccagc      720

ccctacttga gagncttttt tttgggggcc g                                     751


<210>   41
<211>   229
<212>   DNA
<213>   Homo sapiens

<400>   41
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cggagcccga gcccgagccg cagccgccgc ctggggcgct tgggtcggcc tcgaggacac      120

cggagagggg cgccacgccg ccgtggccgc agatttgaaa gaagccgaca ctaaaccacc      180

aatatacaac aaggccattt tgtcaaacga gagtcagcct ttaacgaaa                  229


<210>   42
<211>   233
<212>   DNA
<213>   Homo sapiens

<400>   42
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gaaaatctga cacctaagaa atttactgtg aaaaagcatt ttaaaaagaa aaggttttag      120

aatatgatct attttatgca tattgtttat aaagacacat ttacaattta cttttaatat      180

taaaaattac catattatga aaaaaaaaa aaaaaaaaa aaaaaaaaa aaa                233


<210>   43
<211>   349
<212>   DNA
<213>   Homo sapiens

<400>   43
ggcacgaggg gcgagaggaa gcagggagga gagtgatttg agtagaaaag aaacacagca       60

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cctggccaat ggaaactgag gtaggcgggt catcgcgctg gggtctgtag tctgagcgct      180

acccggttgc tgctgcccaa ggaccgcgga gtcggacgca ggcagaccat gtggaccctg      240

gtgagctggg tggccttaac agcagggctg gtggctggaa cgcggtgccc agatggtcag      300

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<210> 44
<211> 337
<212> DNA
<213> Homo sapiens

<400> 44
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tcaggcctcc ctagcacctc cccctaacca aattctccct ggaccccatt ctgagctccc   120

catcaccatg ggaggtgggg cctcaatcta aggccttccc tgtcagaagg gggttgtggc   180

aaaagccaca ttacaagctg ccatcccctc cccgtttcag tggaccctgt ggccaggtgc   240

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cactttcaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa   337

<210> 45
<211> 1700
<212> DNA
<213> Homo sapiens

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tcctgtgtct ttctagatcc acagtcttgc tctcagaaca ggctagccac accacaggcc   180

tagtgccagg acccatggcc ttttttttaag ctcagactcc cttctgtgaa cagcaatatc   240

cccacaactt gtacaacatt ggtgcttcct gcaagggcta cagaactatt tgatacgaaa   300

atgttcattg acttacacac aagagaagca caaaataaaa aattaataat taatttaatg   360

tctttgaaaa tgtaccattt atttttacat ttggggtcat aagaattgta ttacacttaa   420

gaatgcaata caatttgaag atcagatttt tctccctttg tgagaatttc tcagtatgtg   480

tgatgactac caagaaatca tagccagtca taaattcagt gagttactca taaacgaaca   540

agaaccacct acttcttggg gaggtaggtc tgcttccctt caactcagga tacaactgct   600

ttcaactgct ttcttcacat tagctgacta attagctaga agcctgtcgt aaacaatttt   660

atggttgact ccttccctgg gctcagggtt ccctagaaca gagaggtccc caaatcccgg   720

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cataggagct ggacgcctat tgtgaactgc gcatgtgcgg gatccagatt gtgcactctt   840

tatgagaatc taactaatgc ttgatgatct atctgaacca gaacaatttc atcctgaaac   900

catcccccac caatccatag aaatactgtc ttccacaaaa atgatccctg gtgccaaaaa   960

tgttagagac cactccccta aaactctctt cttagctctc acctcctgta ttactatctc   1020

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gcatttttt attttttgtt tttattttt tccgagacgg agtctcgctc tgtcgccaag    1140

gctggagtgc agtggcgcga tctcggctca ctgcaagctc cgcctcccgg gttcacgcca    1200

ttctcctgcc tcagcctccc aagtagctgg gactacaggc gcccgcacta cgcccggcta    1260

attttttgta tttttagtag agacggggtt tcaccgtggt agccaggatg gtctcgatct    1320

cctgacctcg tgatccgccc gccttggcct cccaaagtgc tgggattaca ggcgtgagac    1380

cgcgcccggc cgtcatttgg tatgtcttaa tgtgcctcag gacctagcac agtccctggt    1440

acccagtaga gacctatgta atgttcgtta ttcaataata aatacatgaa ttaaagagtg    1500


agagtggatt ttgtaatgtt acgactgata gagaaatact cagtgattct aagggatggg    1560

gaagaacggt tggagctaga ggttgtgctc aggaaactat taaatagacg ttccgcagga    1620

agggattgac gaagtgtgag gttaatgagg aagggaaaat agaatataaa atttggtggt    1680

ggaaaagatc tgattcatga                                                1700


<210>   46
<211>   2419
<212>   DNA
<213>   Homo sapiens

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gcacccagaa cagtggtggc aacattcatt gccagggcc caaagaaaga gctacctgga      120

ccttttgttt tctgtttgac aacatgttta ataaataaaa atgtcttgat atcagtaaga      180

atcagagtct tctcactgat tctgggcata ttgatctttc ccccattttc tctacttggc      240

tgctccctga gaggactgca taggatagaa atgcctttt cttttctttt cgttttttt      300

ttttttttt tttgagatgg agtctcactc tgtcgcccag gcttaagtgc aatggcacaa      360

tctcggctca ctgcaacctc tctcctgg gttcaagtga ttctcctgcc tcagcctccc      420

aaatagctga gattacaggc atgcaccacc acctggct aatttttgtg tttttagtag      480

agacagggtt tcaccgtttt ggccaggttg gtcttgaact cctgacctcg ggagatccgc      540

ccaccttggc ctctctttgt gctgggatta caggcatgag ccactgagcc gggccacttt      600

ttccttatca gtcagttttt acaagtcatt agggaggtag acttacctc tctgtgaagg      660

aaagtatggt atgttgatct acagagagag atggaaaaat tccagggctc gtagctacta      720

agcagaattt ccaagatagg caaattgttt tttctgtcaa ataataagct aatattactt      780

ctacaaatat gagaccttgg agagaagttt ccaaggacca agtaccaaca taccaacaga      840
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24

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ttattatagt ttctctcact cttacacaca cacacacaca tatacacata tgtaatccag        900

catgaatacc aaaattcatt cagggtagcc acctttgtc ttaatcgaga gataattttg        960

atgtttgaat ggaatgctcc caggatattc tcttgtcatg gttattttat ataaaattca       1020

aaaaccaatt acattatttc ctctgtaatc ttttacttta tcaactaatg tctggcaagt       1080

gtgatgtttt ggggaagtta tagaagattc cggccaggcg cttatctcac gcttgtaatc       1140

cagcactttg ggaagctgag gcggacagat cacgaggtca agagatcaag accatcctgg       1200

acaacatggt gaaaccttgt ctctactaaa aatgtgaaaa ttagctgggc gtggtggcac       1260

acacctatag tcccagctac tcgggaggct gaggcaggag aatcgcttga acctaggagg       1320


cggaggttgc actgagccga gatcacgcca ctgcactcca gcctgggcga cagagcgaga       1380

ctccatctca aaaaaaaaa aaaagaaag atcccagttt atcccagttt atcccttatt         1440

cttcctcaat tctcaagatt tgttttaag ttaacataac ttaggttaac acactctttg        1500

taaaatacac tgttcaatct acagactcag tggttagctt cctgttaact aatttctgtt       1560

gacaggtact tggatatttt atttagaaag tggttgccaa taaattagtt ataagtcgcc       1620

agtttcactg ccttgtgaac acataattat tgtggtctca gtattcccta tggtggcttc       1680

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aggaatgggt ttgagaagta ggtagctggt atgtgcttag cacaagaatc tctcttcctt       1860

gggttagtct gtttcaaaac tgaaaacact gtcattcctt aagaaaatag gaaaaagtat       1920

tccaaacctc tgtcactaga aaatttgcca tattaccaaa tctcaaaaac ctctcaggaa       1980

atgagaaagt cccagtttct ggtaaactat ttgggccctt ttctcaagtt ctccttccag       2040

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gccgatggta ctggcacctg agcaagcatt cctagtcctt tttggtctgg gcctcttgtt       2340

ctatcacaac cacaagctgt ttaaaataaa aacgtcaagt cacaggcagg tcattttatc       2400

ctgcgtgaat caattgaag                                                    2419


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<211>  297
<212>  DNA
<213>  Homo sapiens
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25

<400> 47

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cggccagtgt gtcgggctgg gccctgacaa gccacctgag gagaggctcg gagccgggcc       120

cggaccccgg cgattgccgc ccgcttctct ctagtctcac gagggttttc ccgcctcgca       180

ccccaccctc tggacttgcc tttccttctc ttctccgcgt gtggagggag ccagcgctta       240

ggccggagcg agcctggggg ccgcccgccg tgaagacatc gcggggaccg attcacc         297
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<210> 48
<211> 1192
<212> DNA
<213> Homo sapiens

<400> 48

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tctatttata ttttctacat ctaattttag aagcctggct acaatactgc acaaacttgg       120

ttagttcaat ttttgatccc ctttctactt aatttacatt aatgctcttt tttagtatgt       180

tctttaatgc tggatcacag acagctcatt ttctcagttt tttggtattt aaaccattgc       240

attgcagtag catcatttta aaaaatgcac ctttttattt atttattttt ggctagggag       300

tttatccctt tttcgaatta ttttttaagaa gatgccaata taattttgt aagaaggcag       360

taacctttca tcatgatcat aggcagttga aaaatttta caccttttt ttcacatttt        420

acataaataa taatgctttg ccagcagtac gtggtagcca caattgcaca atatattttc       480

ttaaaaaata ccagcagtta ctcatggaat atattctgcg tttataaaac tagtttttaa       540

gaagaaattt ttttggcct atgaaattgt aaacctgga acatgacatt gttaatcata         600

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atatagaaag atatgcatat atctagaagg tatgtggcat ttatttggat aaaattctca       720

attcagagaa atcatctgat gtttctatag tcactttgcc agctcaaaag aaaacaatac       780

cctatgtagt tgtggaagtt tatgctaata ttgtgtaact gatattaaac ctaaatgttc       840

tgcctaccct gttggtataa agatattttg agcagactgt aaacaagaaa aaaaaaatca       900

tgcattctta gcaaaattgc ctagtatgtt aatttgctca aaatacaatg tttgatttta       960

tgcactttgt cgctattaac atcctttttt tcatgtagat ttcaataatt gagtaatttt      1020

agaagcatta ttttaggaat atatagttgt cacagtaaat atcttgtttt ttctatgtac      1080

attgtacaaa ttttcattc cttttgctct ttgtggttgg atctaacact aactgtattg      1140

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<210> 49
<211> 197

26

<212> DNA
<213> Homo sapiens

<400> 49
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tggggcgacg ctcacgaacg atcagagctg cgggcgacgc aacgaagccc ggaggccgca   120

ggctgcgcgc tccctcgcag cagccgggcg ggcaaaagcc cccagtcctc ggcccccgcg   180

caagcgacgc cgggaaa   197

<210> 50
<211> 3293
<212> DNA
<213> Homo sapiens

<400> 50
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cacttttgct cagaagaaag ctctggatct atcaaataaa gaagtccttc gtgtgggcta   120

catatataga tgttttcatg aagaggagtg aaaagccaga aggatataga caaatgaggc   180

ctaagacctt tcctgccagt aactatactg tcagtagccg gcaaatgtta caagaaattc   240

gggaatccct taggaattta tctaaaccat ctgatgctgc taaggctgag cataacatga   300

gtaaaatgtc aaccgaagat cctcgacaag tcagaaatcc acccaaattt gggacgcatc   360

ataaagcctt gcaggaaatt cgaaactctc tgcttccatt tgcaaatgaa acaaattctt   420

ctcggagtac ttcagaagtt aatccacaaa tgcttcaaga cttgcaagct gctggatttg   480

atgaggatat ggttatacaa gctcttcaga aaactaacaa cagaagtata gaagcagcaa   540

ttgaattcat tagtaaaatg agttaccaag atcctcgacg agagcagatg gctgcagcag   600

ctgccagacc tattaatgcc agcatgaaac cagggaatgt gcagcaatca gttaaccgca   660

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gagaaagtgt ggcctatcat tctgagagtc ccaactcaca gacagatgta ggaagacctt   780

tgtctggatc tggtatatca gcatttgttc aagctcaccc tagcaacgga cagagagtga   840

acccccacc accacctcaa gtaaggagtg ttactcctcc accacctcca agaggccaga   900

ctccccctcc aagaggtaca actccacctc ccccttcatg ggaaccaaac tctcaaacaa   960

agcgctattc tggaaacatg gaatacgtaa tctcccgaat ctctcctgtc ccacctgggg   1020

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atttcatgat acaccaaaat gttgtccctg ctggcactgt gaatcggcag ccaccaccc   1260

27

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agtcatcttc tgctccagcc cagtcatccc cgagcagtgg gcatgaaatc cctacatggc   1500

aacctaacat accagtgagg tcaaattctt ttaataaccc attaggaaat agagcaagtc   1560

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aacagcctgt gaaaagtatg cgtgtattaa aaccagagct acagactgct ttagcaccta   1680

cacacccttc ttggatacca cagccaattc aaactgttca acccagtcct tttcctgagg   1740

gaaccgcttc aaatgtgact gtgatgccac ctgttgctga agctccaaac tatcaaggac   1800

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ttactgttag gaaaaacaag aaagatgaag agcgaaggga atctcgtatt caaagttatt   2040

ctcctcaagc atttaaattc tttatggagc aacatgtaga aaatgtactc aaatctcatc   2100

agcagcgtct acatcgtaaa aaacaattag agaatgaaat gatgcgggtt ggattatctc   2160

aagatgccca ggatcaaatg agaaagatgc tttgccaaaa agaatctaat tacatccgtc   2220

ttaaaagggc taaaatggac aagtctatgt ttgtgaagat aaagacacta ggaataggag   2280

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aggacaattt atactttgta atggactaca ttcctggggg tgatatgatg agcctattaa   2520

ttagaatggg catctttcca gaaagtctgg cacgattcta catagcagaa cttacctgtg   2580

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ggacacacga ttctaagtac tatcagagtg gtgaccatcc acggcaagat agcatggatt   2760

tcagtaatga atgggggggat ccctcaagct gtcgatgtgg agacagactg aagccattag   2820

agcggagagc tgcacgccag caccagcgat gtctagcaca ttctttggtt gggactccca   2880

attatattgc acctgaagtg ttgctacgaa caggatacac acagttgtgt gattggtgga   2940

gtgttggtgt tattcttttt gaaatgttgg tgggacaacc tcctttcttg gcacaaacac   3000

cattagaaac acaaatgaag gtcacctgct gctatataca tcattggctc gagaagaaac   3060
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28

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ttatctgcag ttatgttgag ggcccatctc tcccccaca ccccacaga gctaactggg      4140

ttacagtgtt ttatccgaaa gtttccaatt cc                                  4172


<210>   61
<211>   238
<212>   DNA
<213>   Homo sapiens

<400>   61
ccattgtgct ggaaaggcgc gcaacggcgg cgacggcggc gaccccaccg cgcatcctgc    60

caggcctccg cgcccagccg cccacgcgcc cccgcgcccc gcgccccgac cctttcttcg    120

cgcccccgcc cctcggcccg ccaggccccc ttgccggcca cccgccaggc cccgcgccgg    180

cccgcccgcc gcccaggacc ggcccgcgcc ccgcaggccg cccgccgccc gcgccgcc     238


<210>   62
<211>   547
<212>   DNA
<213>   Homo sapiens

<400>   62
ggccccgcag ctctggccac agggacctct gcagtgcccc ctaagtgacc cggacacttc    60

cgagggggcc atcaccgcct gtgtatataa cgtttccggt attactctgc tacacgtagc    120

cttttacatt ttggggtttt gttttgttc tgaactttcc tgttaccttt tcagggctga     180

tgtcacatgt aggtggcgtg tatgagtgga dacgggcctg ggtcttgggg actggagggc    240

aggggtcctt ctgcccctgg ggtcccaggg tgctctgcct gctcagccag gcctctcctg    300

ggagccactc gcccagagac tcagcttggc caacttgggg ggctgtgtcc acccagcccg    360
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37

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cccgtcctgt gggctgcaca gctcaccttg ttccctcctg ccccggttcg agagccgagt      420

ctgtgggcac tctctgcctt catgcacctg tcctttctaa cacgtcgcct tcaactgtaa      480

tcacaacatc ctgactccgt catttaataa agaaggaaca tcaggcatgc taaaaaaaaa      540

aaaaaaa                                                                547


<210>   63
<211>   102
<212>   DNA
<213>   Homo sapiens

<400>   63
gaattccggc aaacatgagg cagctgccag ccggcctggg cagtcttgtc tgcctcggct       60

gtgaagtggg gaggctggca acagttttct tcagcgccca gg                         102


<210>   64
<211>   2017
<212>   DNA
<213>   Homo sapiens

<400>   64
gacacgtcca aaggagtgca tggccacagc cacctccacc cccaagaaac ctccatcctg       60

ccaggagcag cctccaagaa acttttaaaa aatagatttg caaaaagtga acagattgct      120

acacacacac acacacacac acacacacac acacagcc attcatctgg gctggcagag        180

gggacagagt tcagggaggg gctgagtctg ctagggcc gagtccagag gccccagcca        240

gcccttccca ggccagcgag gcgaggctgc ctctgggtga gtggctgaca gagcaggtct      300

gcaggccacc agctgctgga tgtcaccaag aaggggctcg agtgccctgc aggagggtcc      360

aatcctccgg tcccacctcg tcccgttcat ccattctgct ttcttgccac acagtggccg      420

gcccaggctc ccctggtctc ctccccgtag ccactctctg cccactacct atgcttctag      480

aaagcccctc acctcaggac cccagaggac cagctggggg gcagggggga gaggggtaa       540

tggaggccaa gcctgcagct ttctggaaat tcttccctgg gggtcccagt atccctgct       600

actccactga cctggaagag ctgggtacca ggccacccac tgtggggcaa gcctgagtgg      660

tgaggggcca ctggcatcat tctccctcca tggcaggaag gcggggatt tcaagtttag       720

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gcacagactg ttccctccaa ggtcctctta ggtcccgggg aggaacgtgg ttcagagact      900

ggcagccagg gagcccgggg cagagctcag aggagtctgg gaaggggcgt gtccctcctc      960

ttcctgtagt gccctcccca tggcccagca gcttggctga gcccctctcc tgaagcagct     1020
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38

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gtgcgccgtc cctctgcctt gcacaaaaag cacaagacat tccttagcag ctcagcgcag      1080

ccctagtggg agcccagcac actgcttctc ggaggccagg ccctcctgct ggctgagctt      1140

gggcccggtg gccccaatat ggtggccctg gggaagaggc cttgggggtc tgctctgtgc      1200

ctgggatcag tggggcccca aagcccagcc cggctgacca acattcaaaa gcacaaaccc      1260

tggggactct gcttggctgt cccctccatc tggggatgga gaatgcagcc caaagctgga      1320

gccaatggtg agggctgaga gggctgtggc tgggtggtca gcagaaaccc caggaggaga      1380

gagatgctgc tcccgcctga ttggggcctc acccagaagg aacccggtcc cagccgcatg      1440

gcccctccag gaacattccc acataataca ttccatcaca gccagcccag ctccactcag      1500

ggctggcccg gggagtcccc gtgtgcccca agaggctagc cccagggtga gcagggccct      1560

cagaggaaag gcagtatggc ggaggccatg ggggcccctc ggcattcaca cacagcctgg      1620

cctcccctgc ggagctgcat ggacgcctgg ctccaggctc caggctgact ggggcctctg      1680

cctccaggag ggcatcagct ttccctggct cagggatctt ctccctcccc tcacccgctg      1740

cccagccctc ccagctgatg tcactctgcc tctaagccaa ggcctcagga gagcatcacc      1800

accacaccct gcggccttgc cttggggcca gactggctgc acagcccaac caggaggggt      1860

ctgcctccca cgctgggaca cagaccggcc gcatgtctgc atggcagaag cgtctccctt      1920

gccacggcct gggagggtgg ttcctgttct cagcatccac taatattcag tcctgtatat      1980

tttaataaaa taaacttgac aaaggaaaaa aaaaccg                               2017


<210>    65
<211>    97
<212>    DNA
<213>    Homo sapiens

<400>    65
gtccaggaac tcctcagcag cgcctccttc agctccacag ccagacgccc tcagacagca       60

aagcctaccc ccgcgccgcg ccctgcccgc cgctgcg                               97


<210>    66
<211>    1474
<212>    DNA
<213>    Homo sapiens

<400>    66
aagtctaatg atcatattta tttatttata tgaaccatgt ctattaattt aattatttaa       60

taatatttat attaaactcc ttatgttact taacatcttc tgtaacagaa gtcagtactc      120

ctgttgcgga gaaaggagtc atacttgtga agactttat gtcactactc taaagatttt      180

gctgttgctg ttaagtttgg aaaacagttt ttattctgtt ttataaacca gagagaaatg      240

agttttgacg tctttttact tgaatttcaa cttatattat aaggacgaaa gtaaagatgt      300
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39

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ttgaatactt aaacactatc acaagatgcc aaaatgctga aagtttttac actgtcgatg      360

tttccaatgc atcttccatg atgcattaga agtaactaat gtttgaaatt ttaaagtact      420

tttgggtatt tttctgtcat caaacaaaac aggtatcagt gcattattaa atgaatattt      480

aaattagaca ttaccagtaa tttcatgtct acttttttaaa atcagcaatg aaacaataat     540

ttgaaatttc taaattcata gggtagaatc acctgtaaaa gcttgtttga tttcttaaag      600

ttattaaact tgtacatata ccaaaaagaa gctgtcttgg atttaaatct gtaaaatcag      660

atgaaatttt actacaattg cttgttaaaa tattttataa gtgatgttcc tttttcacca      720

agagtataaa cctttttagt gtgactgtta aaacttcctt ttaaatcaaa atgccaaatt      780

tattaaggtg gtggagccac tgcagtgtta tctcaaaata agaatatcct gttgagatat      840

tccagaatct gtttatatgg ctggtaacat gtaaaaaccc cataaccccg ccaaaagggg      900

tcctacccctt gaacataaag caataaccaa aggagaaaag cccaaattat tggttccaaa      960

tttagggttt aaacttttg aagcaaactt ttttttagcc ttgtgcactg cagacctggt      1020

actcagattt tgctatgagg ttaatgaagt accaagctgt gcttgaataa cgatatgttt      1080

tctcagattt tctgttgtac agtttaattt agcagtccat atcacattgc aaaagtagca      1140

atgacctcat aaaatacctc ttcaaaatgc ttaaattcat ttcacacatt aattttatct      1200

cagtcttgaa gccaattcag taggtgcatt ggaatcaagc ctggctacct gcatgctgtt      1260

cctttttcttt tcttcttta gccattttgc taagagacac agtcttctca aacacttcgt       1320

ttctcctatt ttgttttact agttttaaga tcagagttca ctttctttgg actctgccta      1380

tattttctta cctgaacttt tgcaagtttt caggtaaacc tcagctcagg actgctattt      1440

agctcctctt aagaagatta aaaaaaaaa aaaa                                   1474


<210>  67
<211>  99
<212>  DNA
<213>  Homo sapiens

<400>  67
gcgcccggcc cccacccctc gcagcacccc gcgccccgcg ccctcccagc cgggtccagc       60

cggagccatg gggccggagc cgcagtgagc accatggag                             99


<210>  68
<211>  614
<212>  DNA
<213>  Homo sapiens

<400>  68
tgaaccagaa ggccaagtcc gcagaagccc tgatgtgtcc tcagggagca gggaaggcct       60
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40

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gacttctgct ggcatcaaga ggtgggaggg ccctccgacc acttccaggg gaacctgcca      120

tgccaggaac ctgtcctaag gaaccttcct tcctgcttga gttcccagat ggctggaagg      180

ggtccagcct cgttggaaga ggaacagcac tggggagtct ttgtggattc tgaggccctg      240

cccaatgaga ctctagggtc cagtggatgc cacagcccag cttggccctt ccttccaga       300

tcctgggtac tgaaagcctt agggaagctg gcctgagagg ggaagcggcc ctaagggagt      360

gtctaagaac aaaagcgacc cattcagaga ctgtccctga aacctagtac tgccccccat      420

gaggaaggaa cagcaatggt gtcagtatcc aggctttgta cagagtgctt ttctgtttag      480

tttttacttt ttttgttttg ttttttaaa dacgaaataa agacccaggg gagaatgggt      540

gttgtatggg gaggcaagtg tggggggtcc ttctccacac ccactttgtc catttgcaaa      600

tatattttgg aaaa                                                        614


<210>  69
<211>  36
<212>  DNA
<213>  Artificial

<220>
<223>  Description of Artificial Sequence: Primer

<400>  69
aaagtcgacg taatcgcgga ggcttggggc agccgg                                  36


<210>  70
<211>  30
<212>  DNA
<213>  Artificial

<220>
<223>  Description of Artificial Sequence: Primer

<400>  70
tttgcgactg gtcagctgcg ggatcccaag                                         30


<210>  71
<211>  33
<212>  DNA
<213>  Artificial

<220>
<223>  Description of Artificial Sequence: Primer

<400>  71
aagtcgacgt aagagctcca gagagaagtc gag                                     33


<210>  72
<211>  33
<212>  DNA
<213>  Artificial
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41

<220>
<223> Description of Artificial Sequence: Primer

<400> 72
aaacccgggc agcaaggcaa ggctccaatg cac   33

<210> 73
<211> 39
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 73
gccgggcagg aggaaggagc ctccctcagg gtttcggga   39

<210> 74
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 74
ctgcactaga gacaaagacg tgatgttaat   30

<210> 75
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Polylinker

<400> 75
gaacaaatgt cgacgggggc ccctagcaga tctagcgctg gatcccccgg ggagctcaug   60

gaagac   66

<210> 76
<211> 30
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 76
cggtgttggg cgcgttattt atcggagttg   30

<210> 77
<211> 30
<212> DNA

<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 77
ttggcgaaga atgaaaatag ggttggtact   30

<210> 78
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 78
ggtgaaggtc ggagtcaacg ga   22

<210> 79
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 79
gagggatctc gctcctggaa g   21

<210> 80
<211> 55
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 80
aaagtcgacg taaccgccag atttgaatcg cgggacccgt tggcagaggt ggcgg   55

<210> 81
<211> 54
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 81
aaaggatccg ggcaacgtcg gggcacccat gccgccgccg ccacctctgc caac   54

<210> 82
<211> 40
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 82
aaagcggccg cggcctctgc cggagctgcc tggtcccaga   40

<210> 83
<211> 37
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 83
aaatctagac tcaggaacag ccgagatgac ctccaga   37

<210> 84
<211> 67
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 84
ctagaagctt agggccgcgg atccgcgcgc ggttcgccgc gcgcggatcc gcggtagcaa   60

gttagtc   67

<210> 85
<211> 68
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 85
gactaagctt gctaccgcgg atccgcgcgc ggcgaaccgc gcgcggatcc gcggccctaa   60

gcttctag   68

<210> 86
<211> 32
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 86
caagaagctt gcgcccggcc ccccaccccct cg   32

<210> 87

<211> 31
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 87
agcccatggt gctcactgcg gctccggccc c   31

<210> 88
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 88
agactctgaa ccagaaggcc aa   22

<210> 89
<211> 36
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 89
ctcggtacca gttttccaaa atatatttgc aaatgg   36

<210> 90
<211> 58
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 90
cccaagcttc gcgcccggcc ccccacccct cgcagcaccc cgcgccccgc gccctccc   58

<210> 91
<211> 61
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Primer

<400> 91
ggccccatgg ctccggctgg acccggctgg gacccggctg ggagggcgcg ggagggcgcg 60

g   61

<210> 92
<211> 7008
<212> DNA
<213> Artificial

<220>
<223> Description of Artificial Sequence: Expression Vector

<400> 92
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gacggatcgg gagatctccc gatcccctat ggtgcactct cagtacaatc tgctctgatg      60

ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg     120

cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc     180

ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt     240

gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata     300

tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc     360

cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc     420

attgacgtca atgggtggag tatttacggt aaactgccca cttggcagta catcaagtgt     480

atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt     540

atgcccagta catgacctta tgggactttc ctacttggca gtacatctac gtattagtca     600

tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg     660

actcacgggg atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc     720

aaaatcaacg ggactttcca aatgtcgta acaactccgc cccattgacg caaatgggcg     780

gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact aagctttcgg     840

cgcgccgagg taccatggga tccgaagacg ccaaaaacat aaagaaaggc ccggcgccat     900

tctatcctct agaggatgga accgctggag agcaactgca taaggctatg aagagatacg     960

ccctggttcc tggaacaatt gcttttacag atgcacatat cgaggtgaac atcacgtacg    1020

cggaatactt cgaaatgtcc gttcggttgg cagaagctat gaaacgatat gggctgaata    1080

caaatcacag aatcgtcgta tgcagtgaaa actctcttca attctttatg ccggtgttgg    1140

gcgcgttatt tatcggagtt gcagttgcgc ccgcgaacga catttataat gaacgtgaat    1200

tgctcaacag tatgaacatt tcgcagccta ccgtagtgtt tgtttccaaa aaggggttgc    1260

aaaaaatttt gaacgtgcaa aaaaattac caataatcca gaaaattatt atcatggatt    1320

ctaaaacgga ttaccaggga tttcagtcga tgtacacgtt cgtcacatct catctacctc    1380

ccggttttaa tgaatacgat tttgtaccag agtcctttga tcgtgacaaa acaattgcac    1440

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ctgcctgcgt cagattctcg catgccagag atcctatttt tggcaatcaa atcattccgg    1560
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46

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atactgcgat tttaagtgtt gttccattcc atcacggttt tggaatgttt actacactcg   1620

gatatttgat atgtggattt cgagtcgtct taatgtatag atttgaagaa gagctgtttt   1680

tacgatccct tcaggattac aaaattcaaa gtgcgttgct agtaccaacc ctattttcat   1740

tcttcgccaa aagcactctg attgacaaat acgatttatc taatttacac gaaattgctt   1800

ctggggcgc acctctttcg aaagaagtcg gggaagcggt tgcaaaacgc ttccatcttc    1860

cagggatacg acaaggatat gggctcactg agactacatc agctattctg attacacccg   1920

aggggatga taaaccgggc gcggtcggta aagttgttcc atttttgaa gcgaaggttg     1980

tggatctgga taccgggaaa acgctgggcg ttaatcagag aggcgaatta tgtgtcagag   2040

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acgatgacgc cggtgaactt cccgccgccg ttgttgtttt ggagcacgga aagacgatga   2340

cggaaaaaga gatcgtggat tacgtcgcca gtcaagtaac aaccgcgaaa aagttgcgcg   2400

gaggagttgt gtttgtggac gaagtaccga aaggtcttac cggaaaactc gacgcaagaa   2460

aaatcagaga gatcctcata aaggccaaga agggcggaaa gtccaaattg cgcggccgct   2520

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tctcgccacg ttcgccggct ttccccgtca agctctaaat cggggggtcc ctttagggtt   2880

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tagtgggcca tcgccctgat agacggtttt tcgcccttg acgttggagt ccacgttctt    3000

taatagtgga ctcttgttcc aaactggaac aacactcaac cctatctcgg tctattcttt   3060

tgatttataa gggattttgc cgatttcggc ctattggtta aaaaatgagc tgatttaaca   3120

aaaatttaac gcgaattaat tctgtggaat gtgtgtcagt tagggtgtgg aaagtcccca   3180

ggctccccag caggcagaag tatgcaaagc atgcatctca attagtcagc aaccaggtgt   3240

ggaaagtccc caggctcccc agcaggcaga agtatgcaaa gcatgcatct caattagtca   3300

gcaaccatag tcccgcccct aactccgccc atcccgcccc taactccgcc cagttccgcc   3360

cattctccgc cccatggctg actaattttt tttatttatg cagaggccga ggccgcctct   3420
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47

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gcctctgagc tattccagaa gtagtgagga ggctttttg gaggcctagg cttttgcaaa    3480

aagctcccgg gagcttgtat atccattttc ggatctgatc agcacgtgat gaaaaagcct    3540

gaactcaccg cgacgtctgt cgagaagttt ctgatcgaaa agttcgacag cgtctccgac    3600

ctgatgcagc tctcggaggg cgaagaatct cgtgctttca gcttcgatgt aggagggcgt    3660

ggatatgtcc tgcgggtaaa tagctgcgcc gatggtttct acaaagatcg ttatgtttat    3720

cggcactttg catcggccgc gctcccgatt ccggaagtgc ttgacattgg ggaattcagc    3780

gagagcctga cctattgcat ctcccgccgt gcacagggtg tcacgttgca agacctgcct    3840

gaaaccgaac tgcccgctgt tctgcagccg gtcgcggagg ccatggatgc gatcgctgcg    3900

gccgatctta gccagacgag cgggttcggc ccattcggac cgcaaggaat cggtcaatac    3960

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gccgaggact gccccgaagt ccggcacctc gtgcacgcgg atttcggctc caacaatgtc    4140

ctgacggaca atggccgcat aacagcggtc attgactgga gcgaggcgat gttcggggat    4200

tcccaatacg aggtcgccaa catcttcttc tggaggccgt ggttggcttg tatggagcag    4260

cagacgcgct acttcgagcg gaggcatccg gagcttgcag atcgccgcg gctccgggcg    4320

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49

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55

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<212> DNA
<213> Artificial

<220>
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cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc   180

ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt   240

gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata   300

tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc   360

cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc   420

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57

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58

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